CLAIMS

What is claimed:

1. A control and monitoring system, comprising:
   (a) a keyboard-video-mouse switch means; and
   (b) a plurality of keyboard-video-mouse cables each of which connects to one of a plurality of computers to be controlled and monitored, the improvement wherein each of said plurality of keyboard-video-mouse cables comprises:
      (i) a first connector, for connecting into a keyboard connection of one of said plurality of computers; and
      (ii) a second connector, for connecting into a mouse connection of one of said plurality of computers; and
      (iii) a third connector, for connecting into a video display port of one of said plurality of computers; and
      (iv) a fourth connector, for connecting into said keyboard-video-mouse switch means; and
      (v) a first cable means connecting said fourth connector to said first connector, said second connector, and said third connector, for carrying keyboard signals, mouse signals, and red, green, blue, vertical sync and horizontal sync video display signals,

   whereby each of said plurality of improved keyboard-video-mouse cables carries keyboard signals, mouse signals, and red, green, blue, vertical sync, and horizontal sync video signals between each of said plurality of computers and said keyboard-video-mouse switch means.

2. A control and monitoring system comprising:
   (a) a keyboard-video-mouse switch means; and
   (b) an improved administration station, the improvement comprising:
      (i) a display, for connecting to said keyboard-video-mouse switch means; and
      (ii) a first housing including said display; and

(iii) a character input means, for connecting to said keyboard-video-mouse-switching means; and

(iv) a pointer means, for connecting to said keyboard-video-mouse switch means; and

(v) a second housing including said character input means and said pointer means such that said character input means and said pointer means may be used by said human operator; and

(vi) said first housing which is rotatably connected to said second housing such that said operator may lay said first housing against said second housing and also swing said first housing away from said second housing,

whereby a human operator can store said first housing and said second housing in a minimum of vertical rack space when the improved administration station is not in use and is able to position said display and said character input means and said pointer means such that said operator can use said character input means to transmit commands and data to said keyboard-video-mouse switch means in the form of a series of characters and use said pointer means to point to any location on said display and be able to view said display.

3. The system of claim 2 wherein said improved administration station is in slidable communication with said keyboard-video-mouse switch means whereby a human operator may slide said improved administration station toward said human operator and away from said third housing such that said human operator may rotate said first housing away from said second housing and view said display, enter character input, and point to any location on said display.

4. A control and monitoring system comprising:

(a) a plurality of processor means for processing keyboard and mouse signals from said plurality of computers; and

(b) a plurality of clock signal generators, one of each connected to said plurality of processor means, for driving each of said plurality of processor means; and

(c) a first processor means connected to each of said plurality of processor means, for passing keyboard signals between a character input means and one of said plurality of processor means and mouse signals between a pointer means and one of said plurality of processor means; and

(d) a first clock generator connected to said first processor means connected to each of said plurality of processor means; and

(e) a first programmable logic means connected to said first processor means; and

(f) a non-volatile random access memory connected to said first processor means and to said first programmable logic means; and

(g) a flash memory connected to said first processor means; and

(h) a video driver means connected to said second programmable logic means and to a first processor means, for displaying a onscreen menu or a set of video signals from one of a plurality of computers; and

(i) a video switch means connected to said first processor means, for receiving a plurality of red, green, blue, horizontal and vertical sync video signals from said plurality of computers and passing said red, green, blue, horizontal and vertical sync video signals to said video driver means.

5. The system of claim 4 wherein said video driver means comprises:

(a) an on screen graphics display circuit, for generating text and graphics for an on screen menu; and

(b) an on screen graphics overlay circuit coupled to said on screen graphics display circuit and said video switch means; and

(c) a first plurality of op-amp amplifying circuits coupled to said on screen graphics overlay circuit, one each for each

of a plurality of red video signals from said on screen graphics overlay circuit; and

(d) a second plurality of op-amp amplifying circuits coupled to said on screen graphics overlay circuit, one each for each of a plurality of green video signals from said on screen graphics overlay circuit; and

(e) a third plurality of op-amp amplifying circuits coupled to said on screen graphics overlay circuit, one each for each of a plurality of blue video signals from said on screen graphics overlay circuit; and

(f) a first signal splitting circuit coupled to said video switch means, for passing a plurality of vertical sync signals from said second programmable logic means; and

(g) a second signal splitting circuit coupled to said video switch means, for passing a plurality of horizontal sync signals from said second programmable logic means,

whereby a plurality of video display devices may be sent video signals of sufficient strength to drive said plurality of video display devices.

6. The system of claim 4 wherein said first processor means comprises a microcontroller.

7. The system of claim 4 wherein said plurality of processor means comprises a plurality of microcontrollers.

8. The system of claim 4 further comprising:

(a) a second processor means connected to said first processor means, for uploading and downloading programming and data and processing commands from a remote computer; and

(b) a second clock signal generator connected to said second processor means, for driving said second processor means; and

(c) a second programmable logic means connected to said second processor means, said video switch means, and said video driver means; and

(d) a communication means connected to said second processor means, for providing commands, programming, and data to said second processor means from said remote computer,

whereby said remote computer may send commands and upload and download programming and data to said first processor means.

9. The system of claim 8 wherein said second processor means comprises a microcontroller.

10. The system of claim 4 further comprising a first plurality of connectors, each of which comprises:

(a) a first set of positions connected to one of said plurality of processor means, for passing keyboard and mouse signals between one of said plurality of computers and one of said plurality of processor means; and

(b) a second set of positions connected to said video switch means, for passing red, green, blue, vertical sync, and horizontal sync video signals between one of said plurality of computers and said video switch means,

whereby a single connector is used for keyboard signals, mouse signals, and red, green, blue, vertical sync, and horizontal sync video signals.

11. The system of claim 4 wherein said first programmable logic means comprises a Complex Programmable Logic Device.

12. The system of claim 8 where said second programmable logic means comprises a Complex Programmable Logic Device.

13. The system of claim 8 wherein each of said first plurality of connectors comprises a fifteen position D-sub connector.

14. The system of claim 8 wherein said communication means comprises:

(a) an EIA-RS-232 Transmitter/Receiver connected to said second processor means for receiving data and transmitting data between said second processor means and a remote computer,

whereby said second processor means receives commands, programming, and data from said remote computer and transmits programming and data to said remote computer.

15. A control and monitoring system comprising:

(a) a first keyboard-video-mouse switch means; and

(b) at least one second keyboard-video-mouse switch means; and

(c) a first EIA-RS-485 Transceiver coupled to said first keyboard-video-mouse switch means for transmitting and receiving differential data signals between said first keyboard-video-mouse switch means and said second keyboard-video-mouse switch means; and

(d) a second EIA-RS-485 Transceiver coupled to said first keyboard-video-mouse switch means for receiving and transmitting differential data signals between said first keyboard-video-mouse switch means and said second keyboard-video-mouse switch means; and

(e) a third EIA-RS-485 Transceiver coupled to said first keyboard-video-mouse switch means for asserting and receiving differential clock signals between said first keyboard-video-mouse switch means and said second keyboard-video-mouse switch means; and

(f) a fourth EIA-RS-485 Transceiver coupled to said second keyboard-video-mouse switch means for transmitting and receiving differential data signals between said second keyboard-video-mouse switch means and said first keyboard-video-mouse switch means; and

(g) a fifth EIA-RS-485 Transceiver coupled to said second keyboard-video-mouse switch means for receiving and transmitting differential data signals between said second keyboard-video-mouse switch means and said first keyboard-video-mouse switch means; and

(h) a sixth EIA-RS-485 Transceiver coupled to said second keyboard-video-mouse switch means for asserting and receiving differential clock signals between said second keyboard-video-mouse switch means and said first keyboard-video-mouse switch means; and

(i) a daisy chain cable means connected to said first keyboard-video-mouse switch means on one end and each of said second keyboard-video-mouse switch means on the other end,

whereby a plurality of control and monitoring systems may communicate with each other.

16. The system of claim 15 wherein said daisy chain cable means comprises:

(a) a fifth connector, for connecting into said first keyboard-video-mouse switch means; and

(b) a sixth connector, for connecting a terminator or communications cable for a computer; and

(c) a seventh connector, for connecting into said second keyboard-video-mouse switch means; and

(d) a eighth connector, for connecting into said fifth connector of another daisy chain cable or a terminator; and

(e) a cable means connecting said fifth connector to said sixth connector and to said seventh connector,

whereby a plurality of control and monitoring systems may be daisy chained together.

17. The system of claim 10 further comprising:

(a) a second plurality of connectors connected to said video driver, for a plurality of video display means viewable by a human operator; and

(b) a third plurality of connectors connected to said second processor means, each of said third plurality of connectors may be connected to one of a plurality of character input

means which said human operator can use to send a series of characters to said second processor means; and

(c) a fourth plurality of connectors connected to said second processor means, each of said fourth plurality of connectors may be connected to one of a plurality of pointer means which said operator can manipulate to point to any location on said plurality of video display means.

18. A method for controlling and monitoring a plurality of computer systems, comprising the steps of:

(a) providing a plurality of keyboard-video-mouse (keyboard-video-mouse) cables, each of which is capable of being connected to the keyboard, video, and mouse connections of a computer to be controlled and monitored; and

(b) providing at least one keyboard-video-mouse port; and

(c) providing a plurality of processor means, each of which is connected to at least one keyboard-video-mouse port; and

(d) providing a first processor means coupled to each of said plurality of processor means; and

(e) providing a keyboard connected to said first processor means; and

(f) providing a pointing device connected to said first processor means; and

(g) providing a video display connected to said first processor means; and

(h) providing a video switch controlled by said first processor means; and

(i) selecting one of said keyboard-video-mouse ports and therefore one of said plurality of processor means; and

(j) receiving keyboard and mouse signals from at least one of said keyboard-video-mouse ports; and

(k) transmitting keyboard and mouse signals from selected one of said plurality of processor means to said first processor means; and

(l) receiving keyboard signals from said keyboard into said first processor means; and

(m) receiving mouse signals from said pointing device into said first processor means; and

(n) transmitting keyboard and mouse signals from said first processor means to selected one of said plurality of processor means; and

(o) transmitting keyboard and mouse signals from selected one of said plurality of processor means to selected keyboard-video-mouse port; and

(p) receiving video signals from at least one of said keyboard-video-mouse ports into said video switch; and

(q) directing first processor means to cause said video switch to pass video signals from selected keyboard-video-mouse port to said video display.

19. The method of claim 18 further comprising the steps of:

(a) providing a communications port; and

(b) providing a computer connected to said communications port; and

(c) providing a second processor means coupled to said communications port; and

(d) transmitting commands and data from said computer connected to said communications port into said second processor means; and

(e) directing said second processor means to execute commands received from said computer connected to said communications port.

20. The method of claim 18 further comprising the steps of:

(a) providing a communications port; and

(b) providing a computer connected to said communications port; and

(c) providing a second processor means coupled to said communications port; and

(d) providing a non-volatile random access memory (NVRAM) coupled to said first processor means; and

(e) transmitting commands and data from said computer connected to said communications port into said second processor means; and

(f) directing said second processor means to load programming into itself and store said programming into said flash memory or NVRAM; and

(g) directing said second processor means to cause said plurality of processor means to load programming into themselves.

21. A method for controlling and monitoring a plurality of computer systems, comprising the steps of:

(a) providing a first EIA-RS-485 Transceiver; and

(b) providing a second EIA-RS-485 Transceiver; and

(c) providing a third EIA-RS-485 Transceiver; and

(d) providing a first communications port coupled to said first EIA-RS-485 Transceiver, said second EIA-RS-485 Transceiver, and said third EIA-RS-485 Transceiver; and

(e) providing a first keyboard-video-mouse switch means coupled to said first communications port; and

(f) providing a fourth EIA-RS-485 Transceiver; and

(g) providing a fifth EIA-RS-485 Transceiver; and

(h) providing a sixth EIA-RS-485 Transceiver; and

(i) providing a second communications port coupled to said fourth EIA-RS-485 Transceiver, said fifth EIA-RS-485 Transceiver, and said sixth EIA-RS-485 Transceiver; and

(j) providing a second keyboard-video-mouse switch means coupled to said second communications port; and

(k) providing a daisy chain cable connecting said first communications port to said second communications port; and

(l) directing said first keyboard-video-mouse switch means to cause data to be transmitted via a differential transmit data signal from said first keyboard-video-mouse switch means to said second keyboard-video-mouse switch means through said first EIA-RS-485 Transceiver; and

(m) directing said first keyboard-video-mouse switch means to drive said differential transmit data signal with a differential clock signal from said third EIA-RS-485 Transceiver; and

(n) receiving data into said second keyboard-video-mouse switch means from said first keyboard-video-mouse switch means via a differential receive data signal through said fourth EIA-RS-485 Transceiver; and

(o) directing said second keyboard-video-mouse switch means to transmit data to said first keyboard-video-mouse switch means via a differential transmit data signal through said fifth EIA-RS-485 Transceiver; and

(p) receiving data into said first keyboard-video-mouse switch means from said second keyboard-video-mouse switch means via a differential receive data signal through said second EIA-RS-485 Transceiver.

add A2

add B1